

Erectile Dysfunction



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Sexual Health Problems Important



- common**
- increasing treatable in the FP Setting**
- manifestation of significant disease**
- marker for disease severity & progression**
- hinder co-existing dz management**
- impact on quality of life**
- will see questions on Board Exam**

Sexual Dysfunction is Common

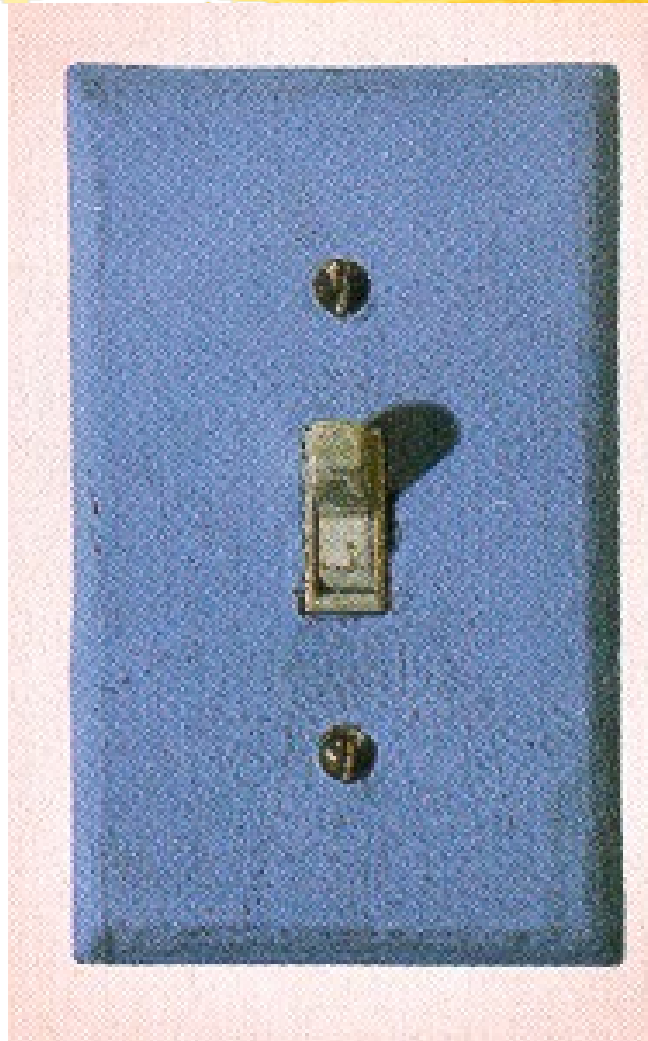


 **43% women**

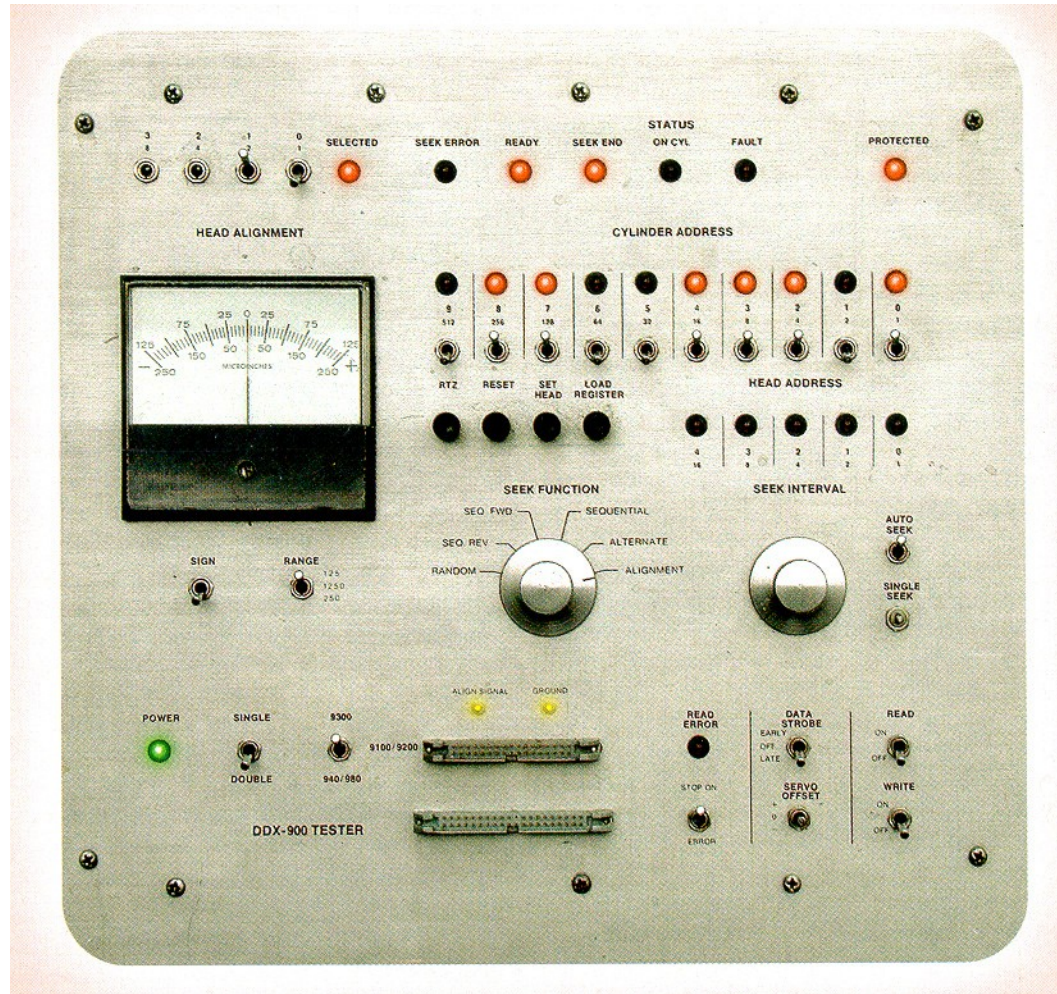
 **31% men**

**Laumann, JAMA.
2000;281(6):537-544**

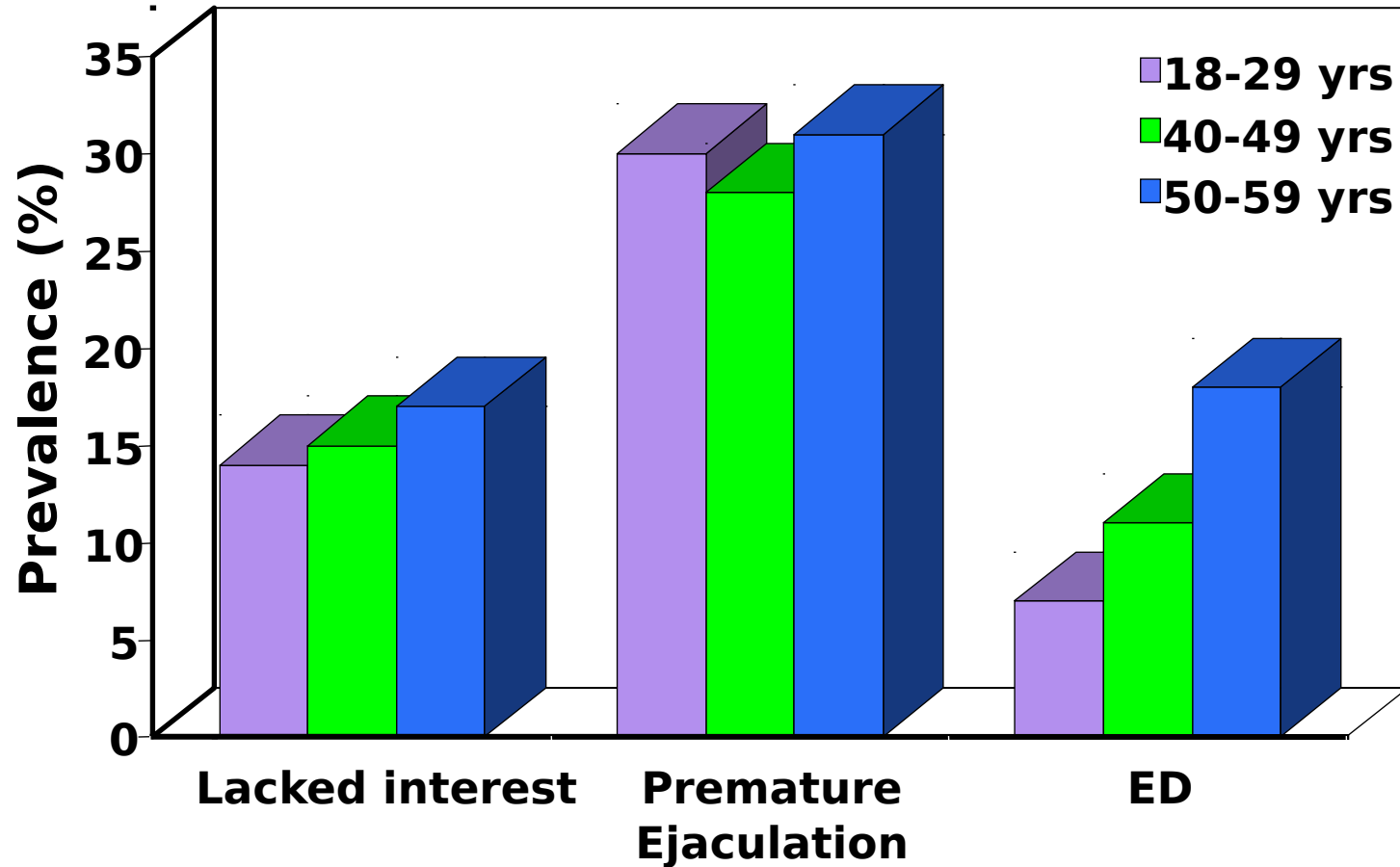
Male Sexuality



Female Sexuality



Prevalence of Male Sexual Dysfunction



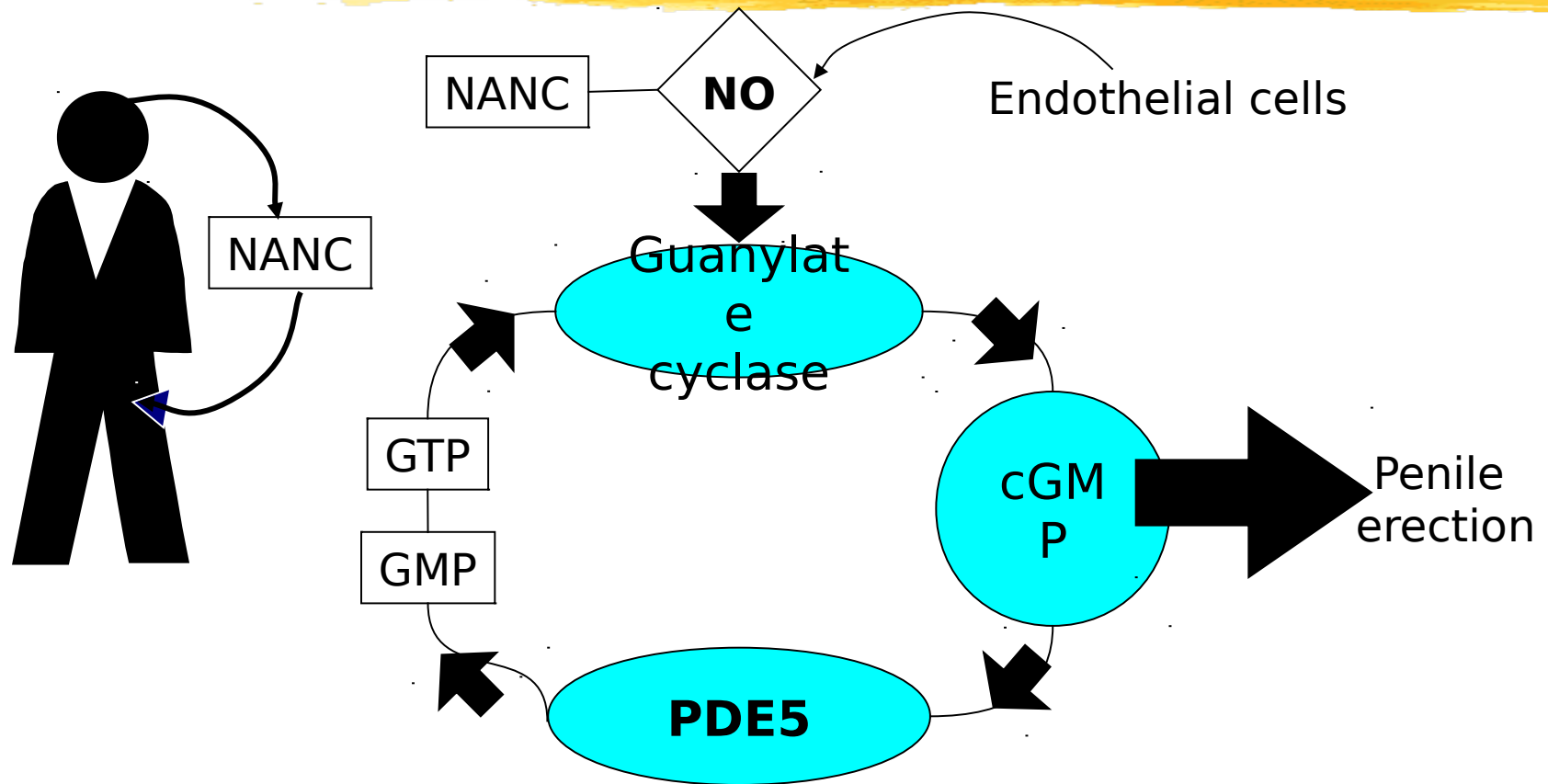
Erectile Dysfunction



| Inability to attain or maintain an erection sufficient to result in satisfactory sexual intercourse.

** Feldman HA, et.al. Impotence and its medical and psychological correlates; results of the Massachusetts Male Aging Study. J Urol 1994;151:54-61

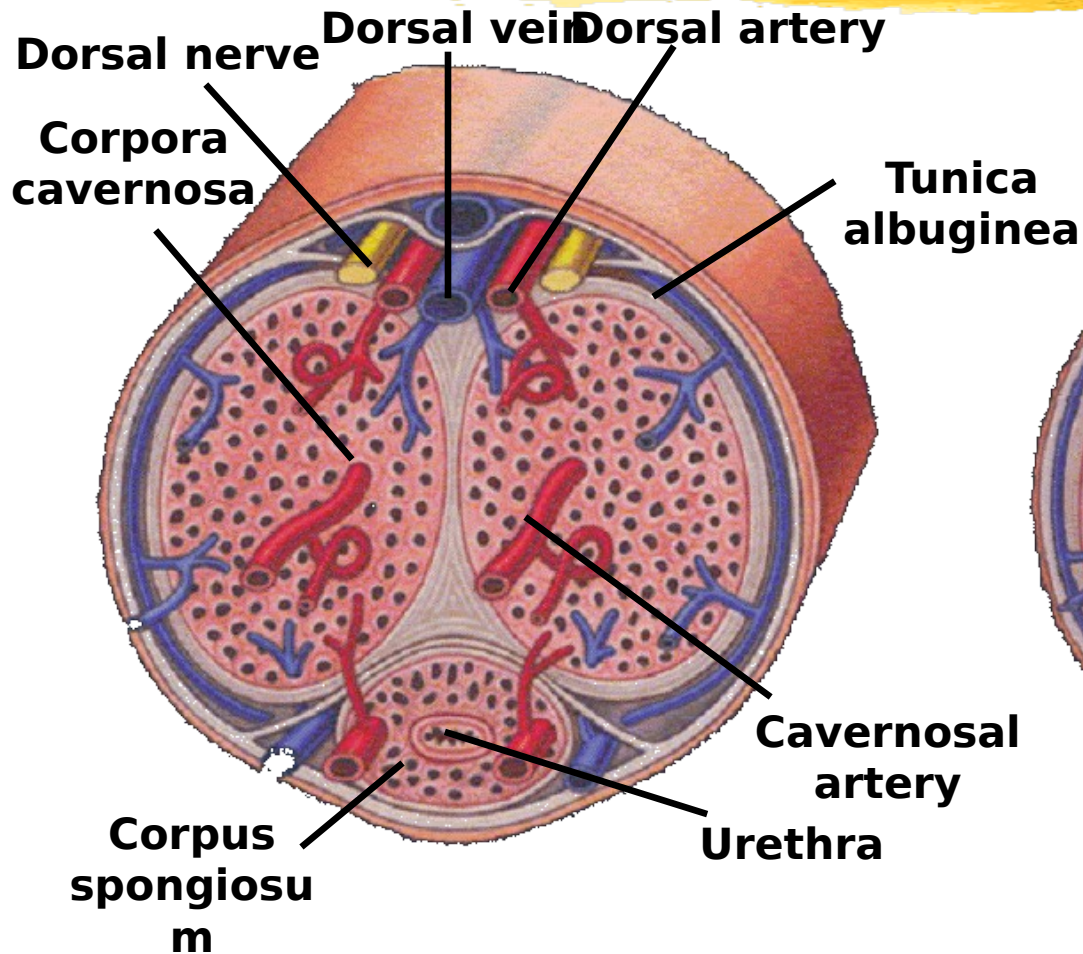
Mechanism of Erection Chemical Pathway



cGMP = cyclic guanosine monophosphate; GTP = guanosine triphosphate;
NO = nitric oxide; PDE5 = phosphodiesterase type 5.

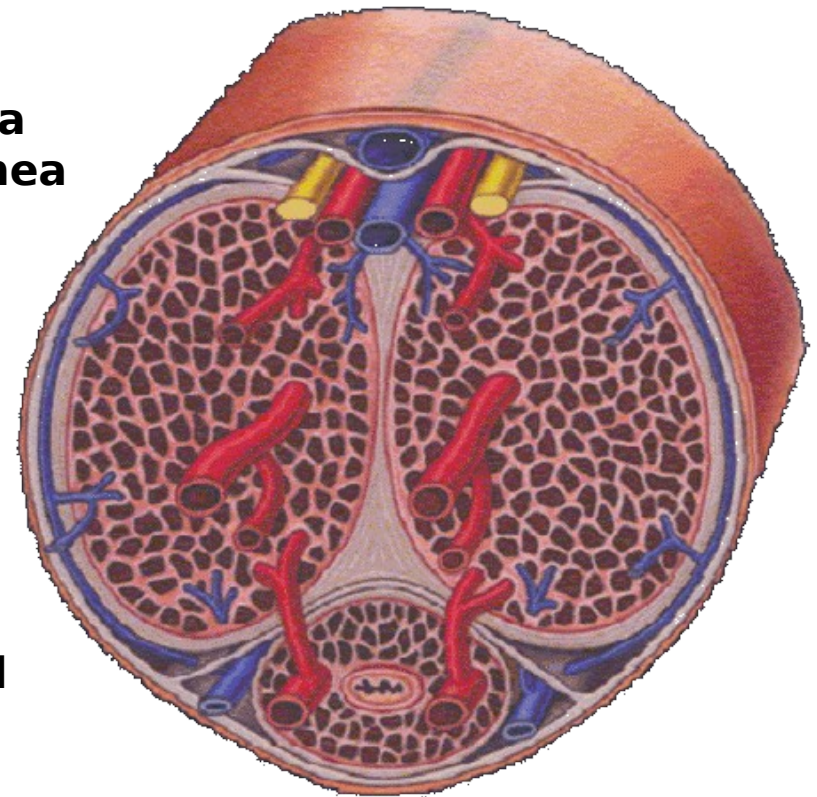
Adapted from Sadovsky R, et al. *Int J Clin Pract.* 2001;55:115-128.

Mechanism of Erection



Flaccid

Penis



Erect Penis

Conditions Associated with Erectile Dysfunction

- **aging**
- **chronic illness**
 - diabetes mellitus
 - hypertension
 - dyslipidemia
- **endocrine d/o**
- **life style**
 - Smoking
- **LUTS / BPH**
- **neurologic d/o**
- **penile disorders**
 - Peyronie's dz
- **prescription meds**
 - hypertension meds
 - antidepressants
- **psychological d/o**
 - depression
 - anxiety
- **trauma /surgery**
 - spinal cord
 - pelvis

ED Classification



- **Psychogenic**

- **Organic**

 - **Vascular**

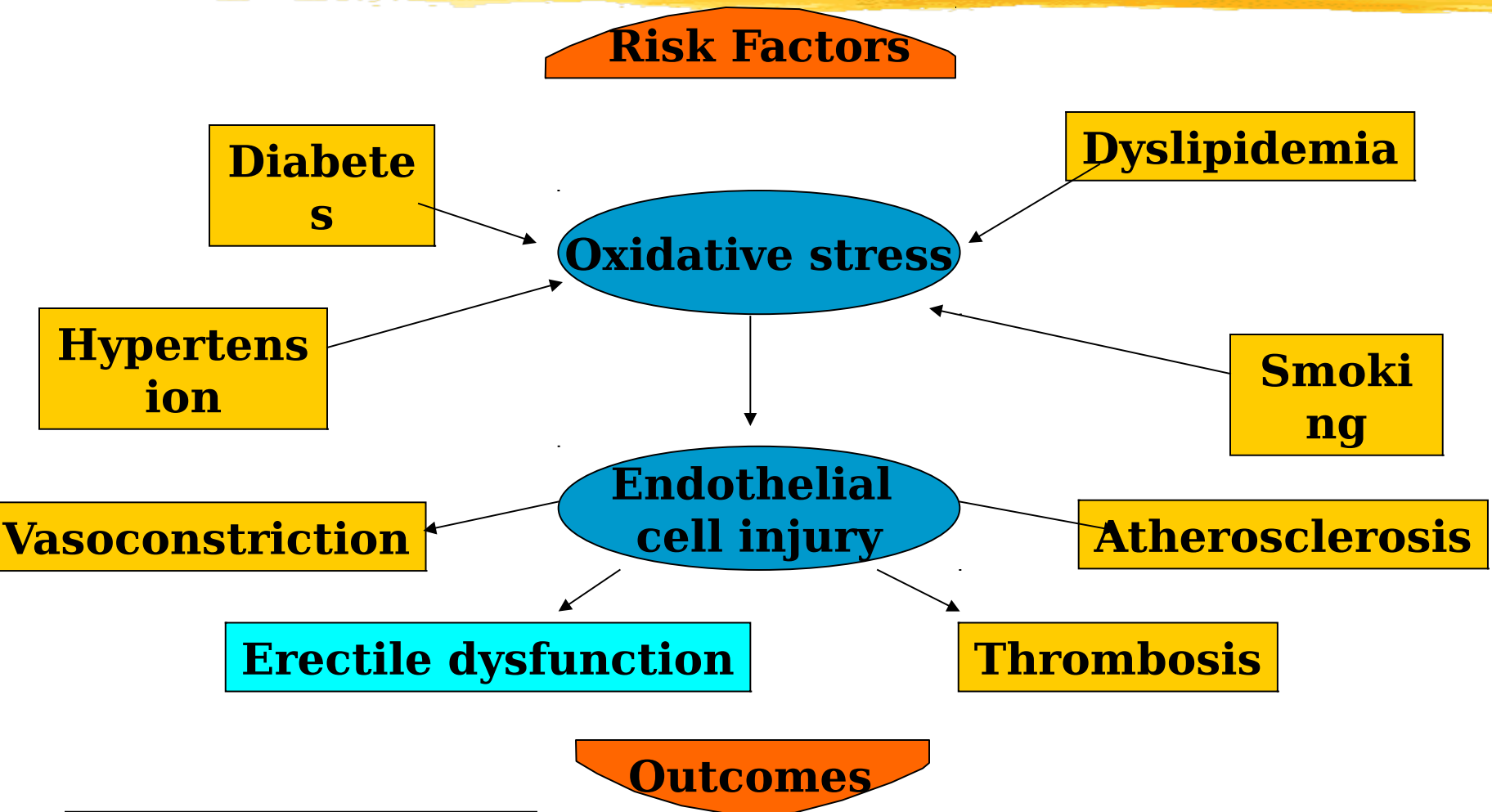
 - **Neurologic**

 - **Hormonal**

- **~ 80% w/ primarily organic etiology**

- **Arterial vascular disease most common etiology**

Vascular Dysfunction: ED Link



Dzau VJ, et al. *Am J Cardiol.* 1997;80(9A):331-391.

NIH Consensus Development Panel on Impotence. *JAMA.* 1993;270:83-90.

ED and Cardiovascular Dz



- 57% of men in one study who had bypass surgery had prior ED
- 64% of men in one study hospitalized for MI experienced prior ED
- ED is likely an indicator of systemic vascular disease and probably an early warning for increased risk of MI or stroke

Jackson G, et al. *Int J Clin Pract.* 1999;53:363-368.

Pritzker MR. Abstract presented at: Proceedings of the American Heart Association; 11/1999; Atlanta, Ga. Abstract 104561.

Wabrek AJ, et al. *Arch Sex Behav.* 1980;9:69-77.

Evaluation



ED often unrecognized

Inquire about sexual function

Thorough history

Focused physical exam

Limited (in most cases) lab testing

History



- | define specific complaint**
 - | altered interest / libido**
 - | problems arousal / erection**
 - | problems with orgasm**
 - | problems with ejaculation**

History



- **onset**
 - age
 - rapid - gradual
- **setting of dysfunction**
 - global
 - certain circumstances
- **quality of erections**
 - partial
 - unable to sustain
- **social situation**
 - relationships
 - stresses
- **associated chronic dz**
- **level of fitness/activity (fitness to engage in sexual activity)**

Physical Examination



- ▮ **vital signs, appearance, affect**
- ▮ **secondary sexual features**
- ▮ **cardiovascular - cardiac, peripheral**
- ▮ **focused neurologic - perineal / perianal**
- ▮ **genital exam**

Lab Studies

- **screen for unrecognized systemic disease**
 - **fasting blood sugar, lipid profile,**
 - **thyroid function, liver and renal function, urinalysis,**
 - **PSA**
- **screen for reversible cause**
 - **testosterone**
 - **Total (<300 ng/dl) vs free (< 50 pg/ml)**

Treatment



- ▢ **Multiple effective treatment options available**
 - ▮ If man wants to regain erectile function, there is a way to make it happen.
- ▢ **Individualized, goal-directed therapy**

Address Reversible Causes



□ Medications

| DC / Switch / Continue & Rx

■ Life Style Modification

- quit smoking, exercise
- prevent / delay onset
- slow progression

Hormone (Testosterone) Replacement

- **indicated for hypogonadism**
- **IM or topical**
 - **topical more sustained levels**
 - **oral not recommended**
- **greater impact on libido**
- **side effects**
 - **BPH / occult prostate CA**

Oral Agents:



PDE-5 Inhibitors

-  Sildenafil (Viagra®)

-  Vardenafil (Levitra®)

-  Tadalafil (Cialis®)

-  **effective for most causes of ED**

 -  **most effective for mild-moderate ED**

-  **no spontaneous erection**

 -  **requires neural stimulation**

Vacuum Constriction Device

- +
 - effective
 - safe
 - inexpensive
- -
 - side-effects
 - lack of spontaneity
 - contraindications



Intracavernosal Injection

- **alprostadil & other agents**

- **+**

- **effective**

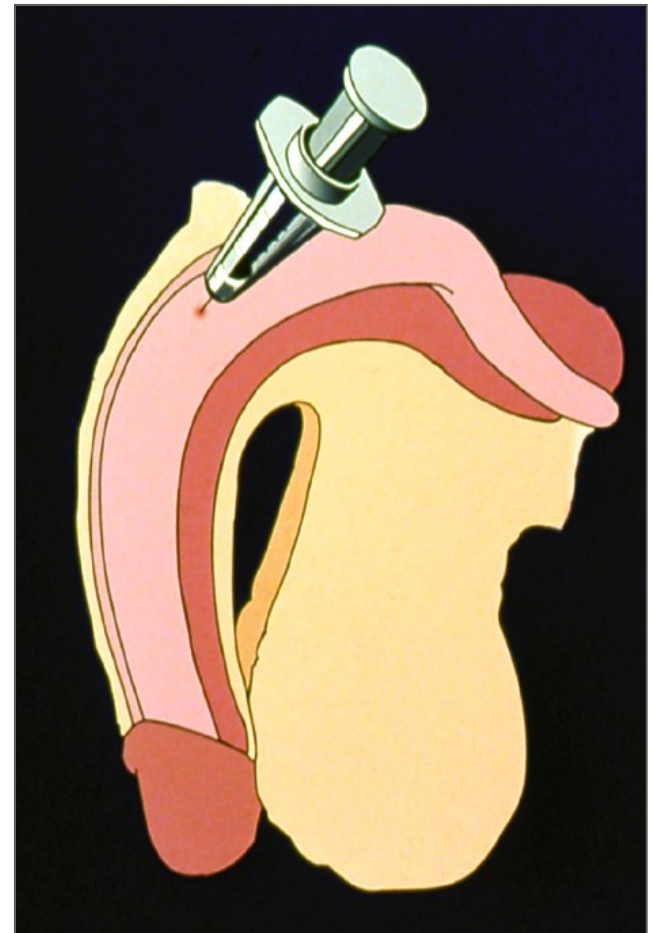
- **-**

- **shot in the penis**

- **side-effects**

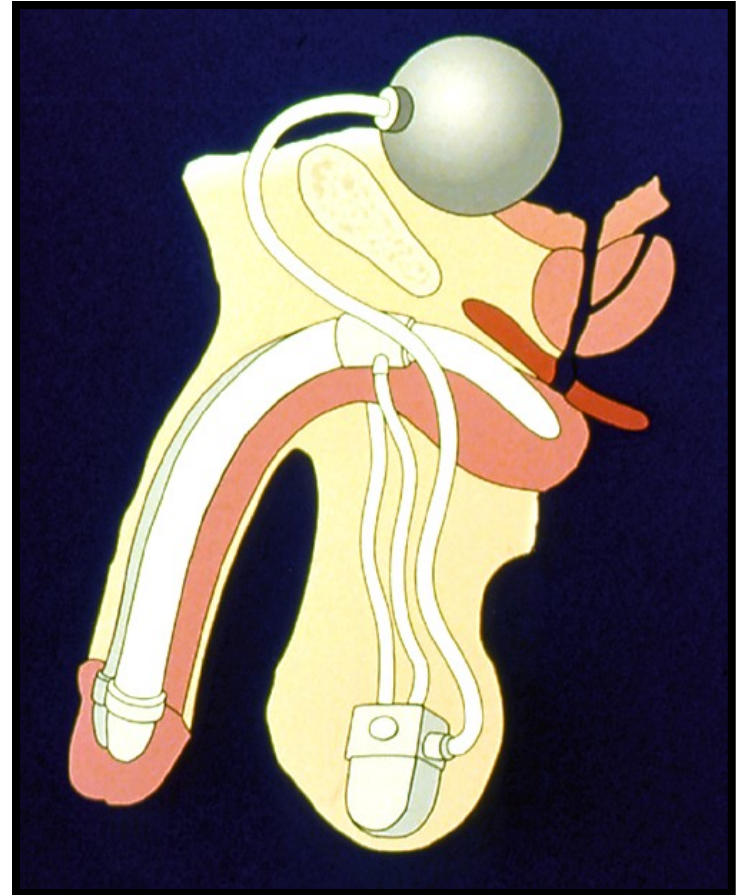
- **cost**

vasoactive



Penile Prosthesis

- Malleable implants
- Inflatable implants
- Invasive and costly
- High satisfaction rate if realistic expectations



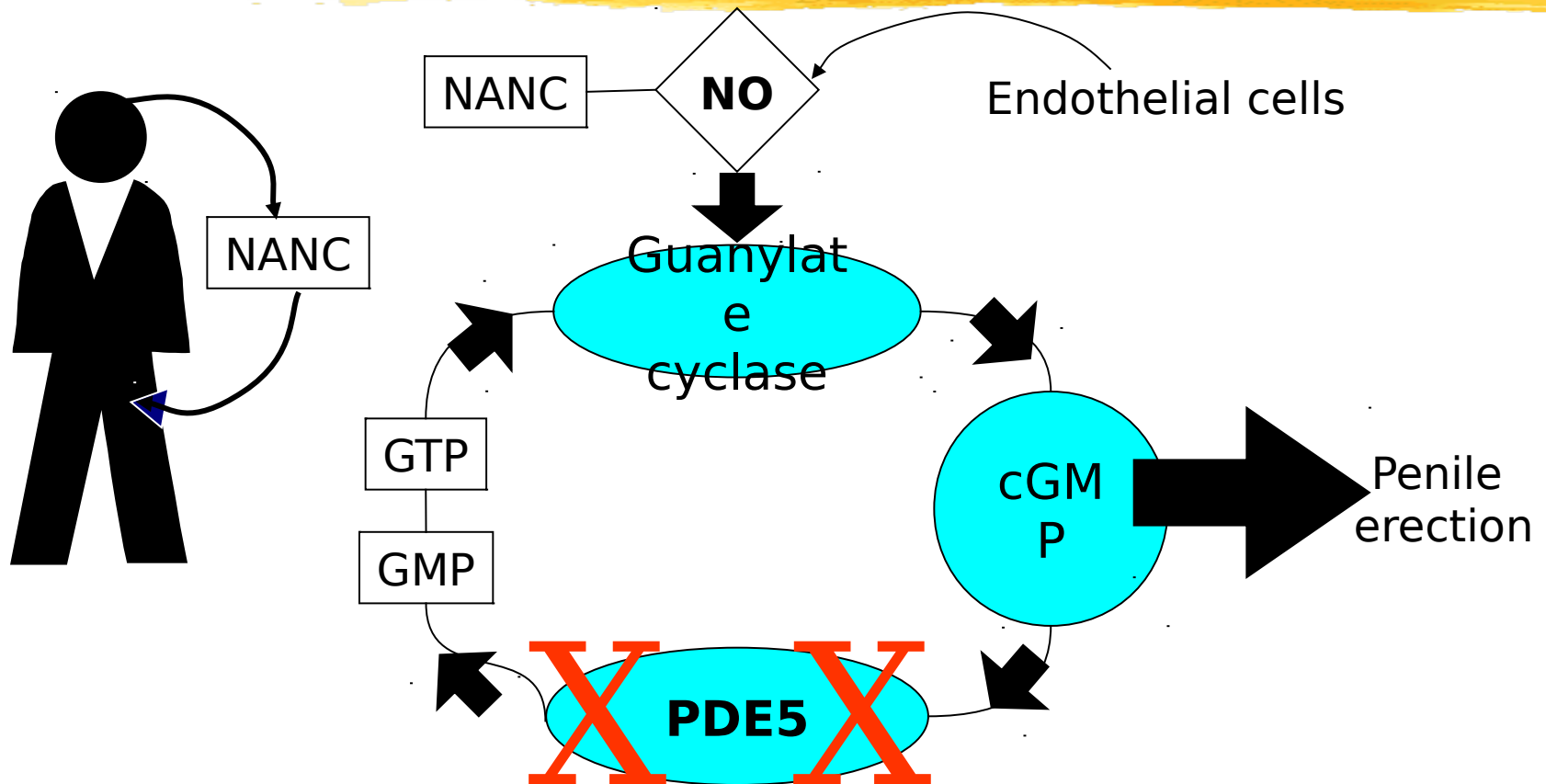
Oral Agents: PDE-5 Inhibitors



- ▮ **Sildenafil (Viagra®)**
- ▮ **Vardenafil (Levitra®)**
- ▮ **Tadalafil (Cialis®)**

- ▮ **Many more similarities than differences**

Mechanism of Action



cGMP = cyclic guanosine monophosphate; GTP = guanosine triphosphate;
NO = nitric oxide; PDE5 = phosphodiesterase type 5.

Adapted from Sadovsky R, et al. *Int J Clin Pract.* 2001;55:115-128.

Pharmacokinetics

	Vardenafil¹ 20 mg	Sildenafil² 100 mg	Tadalafil² 20 mg
T_{1/2}, h	4.6	3.7	17.5
T_{max}, h*	0.8 (0.3-2.0)	1 (0.5-2)	2.0 (0.5-12)
Metabolism	CYP3A4 CYP3A5 CYP2C9	CYP3A4 CYP2C9	CYP3A4
Food Interaction	+		+

¹Klotz et al. *ACCP*. 2002;²As reported in Kim et al. *Formulary*. 2002;37.

*Median (range).

Clinical Effectiveness



- No head-to-head comparisons**
- ~ Similar levels of effectiveness**
- All have demonstrated effectiveness in rx of most causes of ED**

Contraindications



■ Nitrates

- of any type
- including poppers – amyl nitrate

□ Alpha Blockers (terazosin -Hytrin®, tamsulosin -Flomax®, doxazosin - Cardura®, prazosin - Minipress®, or alfuzosin - Uroxatral®)

- Vardenafil - all alpha blockers
- Tadalafil - all alpha blockers
 - except .4mg tamsulosin (Flomax®)

■ Certain military personnel i.e., aviators

Cautions



- **Sildenafil and α -blocker use**
 - **don't dose within 4 hours of α blocker dose**
- **Reduced dosing in pt on meds that inhibit hepatic metabolism**
 - **Protease Inhibitors**
 - Ritonavir
 - **Ketoconazole**
- **Reduced dosing in patients with renal and hepatic dysfunction**

Adverse Event Profile



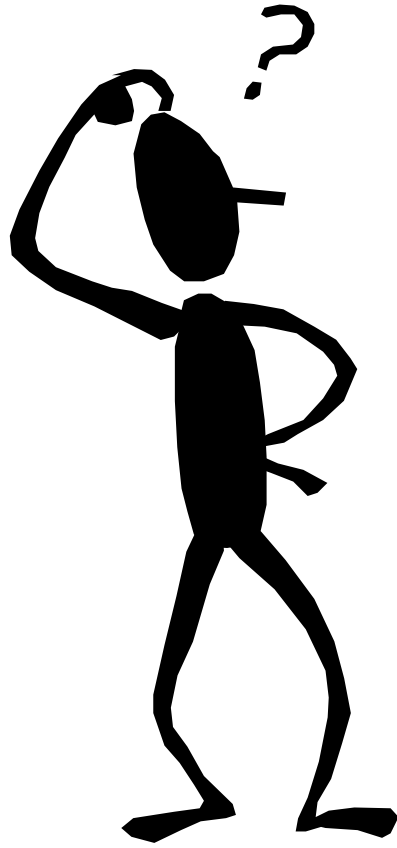
- **Similar for PDE-5 inhibition manifestations**
 - **headache**
 - **flushing**
 - **dyspepsia**
- **Vision changes - blurring / color change most common w/ Sildenafil**
- **Back pain & myalgia most common with Tadalafil**

Summary



- **ED common among men**
 - **most commonly due to arterial vascular disease**
 - **appropriate evaluation hx /focused PE / limited testing in most instances.**
 - **safe and effective treatments available**
- **Sexual health issues are common**
- **Addressing them will result in better care of your patients.**

Questions?



Dietary Supplements



VEROMAX

